

Patent claims

1. Preservative with reduced formaldehyde emission which comprises

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a) at least one formal and

10 b) at least one emission-reducing additive which is chosen from urea, urea derivatives, amino acids, guanidine and guanidine derivatives,

where the preservative

15 (i) comprises no iodopropynyl compound and

15 (ii) no derivative of 1H-benzimidazol-2-carbamic acid.

2. Preservative according to Claim 1, characterized
20 in that the formal is a N- and/or O-formal.

3. Preservative according to Claim 1 or Claim 2, characterized in that the formal is chosen from (ethylenedioxy)dimethanol, benzyl alcohol hemiformal, propylene glycol hemiformal and butyl diglycol hemiformal.

4. Preservative according to one of the preceding claims, characterized in that the formal is chosen from
30 N,N',N"-tris(hydroxyethyl)hexahydrotriazine, N,N',N"-tris(β-hydroxypropyl)hexahydrotriazine and N,N'-methylenebis(5-methyloxazolidine).

5. Preservative according to one of the preceding claims, characterized in that the emission-reducing additive is chosen from glycoluril, tetramethylol-glycoluril, dimethylhydantoin, dimethyloldimethylhydantoin, dimethylolurea, tetramethanolurea, imdazolidinylurea and diazolidinylurea.

6. Preservative according to one of the preceding claims, characterized in that it also comprises c) at least one odour-modifying additive which is chosen from 5 alcohols, glycols and glycol ethers, in particular phenoxyethanol, phenoxypropanols, benzyl alcohol, phenethyl alcohol, phenylpropanols, phenylbutanols and phenylpentanols.

10 7. Preservative according to one of the preceding claims, characterized in that it also comprises d) at least one biocide which is chosen from boric esters, boric acid salts, lactic acid derivatives, isothiazolones, pyridine derivatives, phenols and 15 parabens.

8. Preservative according to one of the preceding claims, characterized in that it also comprises e) at least one additive which is chosen from solvents, 20 solubility promoters, corrosion inhibitors, alkalinizing agents, dyes, perfumes, viscosity modifying agents, foam inhibitors, emulsifiers and antioxidants.

25 9. Preservative according to one of the preceding claims, characterized in that the weight ratio a):b) is in the range from 500:1 to 1:1, preferably 200:1 to 5:1, more preferably 100:1 to 10:1 and in particular 50:1 to 20:1.

30 10. Preservative according to one of the preceding claims, characterized in that it comprises 10% by weight of water or less, preferably 5% by weight or less, in particular 1% by weight or less of water, particular 35 preference being given to anhydrous preservatives.

11. Preservative according to one of the preceding claims, characterized in that it comprises

- a) 90 to 99% by weight, preferably 92 to 98% by weight, more preferably 93 to 97% by weight, in particular about 95% by weight, of N,N'-methylenebis(5-methyloxazolidine) and

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- b) 1 to 10% by weight, preferably 2 to 8% by weight, more preferably 3 to 7% by weight, in particular about 5% by weight, of urea.

10 12. Preservative according to one of Claims 1 to 10, characterized in that it comprises

- a) 80 to 98% by weight, preferably 84 to 96% by weight, more preferably 86 to 94% by weight, in particular about 95% by weight, of N,N'-methylenebis(5-methyloxazolidine),

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- b) 1 to 10% by weight, preferably 2 to 8% by weight, more preferably 2 to 7% by weight, in particular about 5% by weight, of urea and

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- c) 1 to 10% by weight, preferably 2 to 8% by weight, more preferably 3 to 7% by weight, in particular about 5% by weight, of phenoxyethanol.

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13. Process for the preparation of a formal-containing preservative with reduced formaldehyde emission in which

30 a) at least one amine and/or alcohol is initially introduced,

b) formaldehyde is added,

35 c) the mixture is optionally heated to a temperature in the range from 50°C to 100°C,

- d) at least one emission-reducing additive is added which is chosen from urea, urea derivatives, amino acids, guanidine and guanidine derivatives,
- 5 e) the mixture is optionally heated to a temperature in the range from 50°C to 100°C and
- 10 f) optionally odour-modifying additive is added which is chosen from alcohols, glycols and glycol ethers.

14. Process according to Claim 13, characterized in that

15 the temperature of step c) is in the range from 60°C to 80°C, in particular about 70°C, and

20 the temperature of step e) is in the range from 60°C to 80°C, in particular about 70°C, and additionally in step e) water is distilled off under reduced pressure.

15. Use of a preservative according to one of Claims 1 to 12 for preserving a technical product.

25 16. Use according to Claim 15, characterized in that the technical product is a cutting fluid, propellant, surface coating, a dispersion or a water-based paint.

30 17. Use of urea, urea derivatives, amino acids, guanidine or guanidine derivatives for reducing the formaldehyde emission of a composition which comprises a formal.